

Chico

**Golden
Empire
Amateur
Radio
Society, Inc.**

www.gearsw6rhc.org

"Dedicated to Public Service"

THE RADIATOR

W6RHC
IRLP #8170

P.O.Box 202 Chico, CA 95927

April 2023 Newsletter

GEARS Founded August 13, 1939

From the President

Radio operators were the unsung heroes of disaster relief in Northern California since the last newsletter. Unusual snowstorms left entire ridge communities like Cohasset without power and phone service, but radio operators in unaffected parts of Butte County were reached by locals to inform the phone company that landline service was unpowered in the afflicted area. The telco installed generators to restore service.

Repeater connected 4WD drivers with licensed radio navigators were dispatched to trapped snow-bound residents, sometimes under the weight of collapsing roofs, to deliver food, propane, electric heaters, blankets, and firewood when available. Radio was used to tell dispatch about arrivals and departures from addresses when there wasn't a cell signal.

The upcoming Chico Wildflower Century bike ride on April 30 will have GEARS/ARES ham operators in support cars roaming the courses using repeaters and APRS locators, which work even with no cell service, to allow the cars to be tracked on an online map.



CERT is having a "Preparedness Information For The Public" class at the OEM Training Room, 205 Mira Loma Dr, Oroville at 9 am for 3 hours on Saturday, April 15. Hopefully, snow storms won't turn the classroom into a call center again.

The next ham radio breakfast will also be at 9am on the second Saturday, April 8th at Farmer's Skillet on Cohasset in Chico.

The next general meeting, the third Monday on April 17th is at the Chico Public Library, 1108 Sherman Ave. 6 pm social gathering, 7 pm meeting.

Check in to the GEARS net at 7:30 pm Tuesdays on 146.85- pl 110.9.

'73

J. Kent Hastings WA6ZFY
wa6zfy@arri.net

April 2023 Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2 8pm OARS Net VEC Testing	3 7pm GARS Net 8pm ARES Net 7pm GEARS Board Meeting	4 7pm PARS Net 7:30pm GEARS Net	5	6 6:30 pm PARS meetings 7:30pm Simplex Net	7 7pm OARS meeting 7pm GARS meeting	8 9am Chico Breakfast
9 8pm OARS Net	10 7pm GARS Net 8pm ARES Net	11 7pm PARS Net 7:30pm GEARS Net	12	13 7:30pm Simplex Net	14	15
16 8pm OARS Net	17 6pm GEARS Meeting 7pm GARS Net 8pm ARES Net	18 7pm PARS Net 7:30pm GEARS Net	19	20 7:30 Simplex Net	21	22 9am OARS Breakfast
23 / 30	24 7pm GARS Net 8pm ARES Net	25 7:30pm GEARS Net	26	27 7:30 Simplex Net	28	29

VEC Testing, FCC License Exam available by appointment. For information or registration call Tom Rider, W6JS 530-514-9211

Chico Breakfast 2nd Saturday 9am Farmers Skillet Cohasset Rd, Chico

GEARS Board Meeting 1st Monday 7pm by Google video meetups.

PARS Meeting 2nd Thursday 6:30pm, doors open 6pm Old Magalia Community Resource Center

OARS Meeting Second Friday of the month, St. Pauls Episcopal Church Hall, Oroville.

GARS Meeting Second Friday of the month, Lutheran Church Hall, Artois.

GEARS Meeting, Doors open 6pm, meeting 7pm at Chico Public Library, 1108 Sherman Ave, Chico

OARS Breakfast 4th Saturday of the month, at Cornucopia of Oroville.

NETS:

OARS Club Net Sunday 8pm 146.655 Mhz - PL 136.5

GARS Club Net Monday, 7:00 pm 147.105 MHz + PL 110.09, secondary: 146.850 MHz-PL 110.9

Yuba Sutter Club Net Monday 7pm 146.085 MHz + PL 127.3

GEARS Club Net Tuesdays 7:30 PM 146.850 MHz - PL 110.9

PARS Club Net Tuesday 7pm 145.290 - PL 110.9

Simplex Net Thursday 7:30 p.m. 146.52 no tone

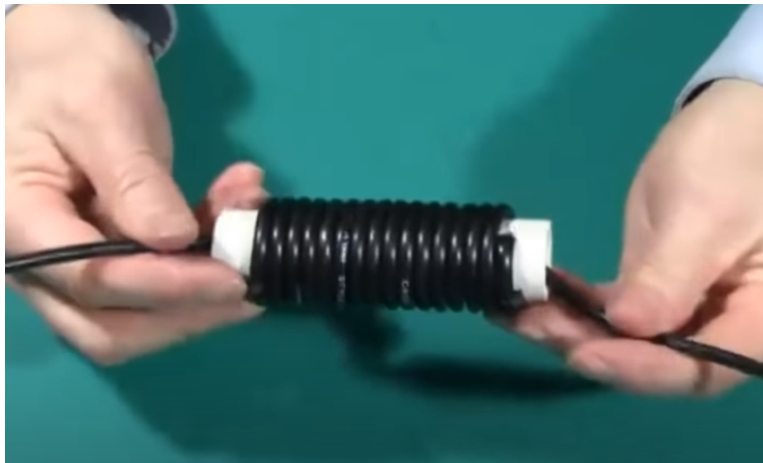
Yuba Sutter ARES Net Thursdays 7pm 146.085 MHz + PL 127.3

Sacramento Valley Traffic Net Nightly 9:00 PM 146.850 MHz - PL 110.9

Build an All Band HF Air Core 1:1 Choke Balun THE "UGLY BALUN"

By Rick Measures, AG6K

A balun's purpose is to allow connecting a balanced, (e.g., a dipole or driven element) to an unbalanced line such as coax which is not balanced -- thus the name, Balun. The 1:1 choke "balun" is not actually a balun. It's function is to help eliminate rf currents from flowing on the outside of coaxial cable using the principle of choke action. It's also called an "air choke."



In transmitting antennas, this is accomplished by presenting a high impedance (resistance), to RF currents flowing outside the coax shield. This forces currents in each side of a driven elements to be equal. This is especially important in beam antennas because it prevents distortion of the beam's pattern caused by unequal currents in the driver(s). In a simple dipole, the balun (choke), assures that the dipole, and not the feed line, is doing the radiating!

When you connect center fed antennas, like dipoles, V's, triangles, yagis, rhombics, loops and so on, to coaxial cable, unless care is taken, it is not difficult to end up with feeder radiation. Not only can the loss in power be quite significant, but the radiation characteristics of the antenna system will also be seriously compromised.

In laymen's terms, it won't be what you are expecting from the pattern of your antenna.

As the feedline becomes part of the antenna, currents can flow from the line into the mains and on TV cables, metal masts and yagi booms, causing a variety of EMI problems that can be very difficult to trace. Frequently these problems are simply due to unbalance - and the solution is the humble air choke. If an antenna system is fed at center with a parallel conductor line (provided that correct installation procedures are followed) balance will be maintained, using a balun, with currents in equal and opposite phase canceling each other out.

When the connection is to a coaxial cable, without a balun, this cannot occur because currents flowing inside the cable from the connection to the inner conductor are separated from those flowing on the outside from the connection to the shield, and the result is unbalance causing feeder radiation. However, if the two electrical circuit elements (antenna and coaxial cable) are coupled using a balun, balance will be maintained.

Enter.....The Ugly Balun!..

"No costly ferrite-cores are needed, just a short length of 3 to 5 inch size plastic pipe, about 25 feet of 50ohm coax plus some nylon cable ties.

Solid-dielectric coax is best for this application because foam-dielectric has a tendency to allow a change in the conductor to conductor spacing over a period of time if it is bent into a tight circle. This can eventually result in voltage breakdown of the internal insulation.

The required length of the plastic pipe depends on the diameter and length of the coax used and the diameter of the pipe. For RG-213/U coax, about one foot of 5 inch size pipe is needed for a 1.8MHz to

30MHz balun. For 3.5MHz to 30MHz coverage, about 18 to 21 feet of coax is needed. This length of coax is also adequate for most applications on 1.8MHz, as 18 to 21 feet should cover all of 160 through 10 meters.

The number of turns is not critical because the inductance depends more on the length of the wire (coax) than on the number of turns, which will vary depending on the diameter of the plastic pipe that is used. The coax is single-layer close-wound on the plastic pipe.

The first and last turns of the coax are secured to the plastic pipe with nylon cable ties passed through small holes drilled in the plastic pipe. The coil winding must not be placed against a conductor.

The name of this simple but effective device is a choke balun. NOTE: Some people build choke-baluns, without a plastic coil-form, by scramble-winding the coax into a coil and taping it together. The problem with scramble-winding is that the first and last turns of the coax may touch each other. This creates two complications. The distributed-capacitance of the balun is increased and the RF-lossy vinyl jacket of the coax is subjected to a high RF-voltage. The single-layer winding on the plastic coil-form construction method solves these problems since it divides the RF-voltage and capacitance evenly across each turn of the balun"

For more information on styles and types you can easily build for your shack, visit:

<https://www.hamuniverse.com/balun.html>

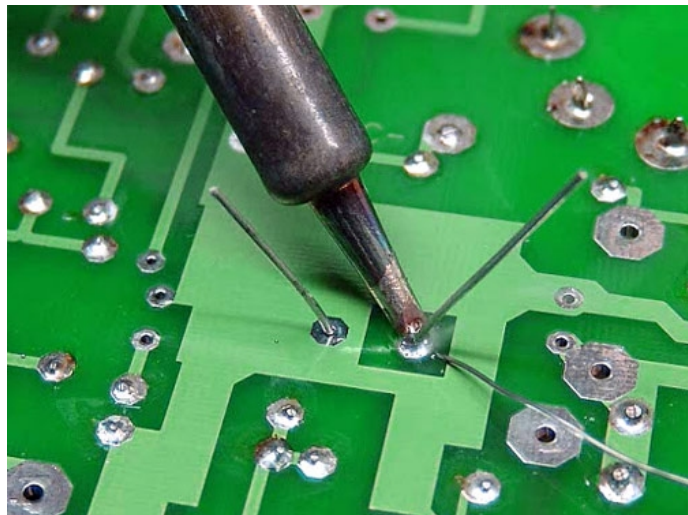
Ham Radio 101: Soldering Tips

By Mark Haverstock, K8MSH

Learning how to solder using proper techniques is a fundamental skill every ham should master. Whether you're attaching connectors to a coaxial cable or constructing a balun, knowing how to solder will come in handy.

Grab a roll of solder, soldering iron, stand, and a tip cleaner. Let's get started.

Safety first! There are a few things we should consider before firing up that soldering iron.



Soldering irons can reach temperatures approaching 900 degrees F, so it's very important to know where your iron is at all times. Use a soldering iron stand to help prevent accidental burns or damage. Handle with care—always hold the soldering iron close to the base. If it smells like chicken, you're probably holding it wrong.

Clear the area, giving yourself room to work. You don't want to accidentally burn anything, especially yourself or your favorite radio.

Wear protective eyewear. Hold wires to be heated with tweezers, pliers or clamps to avoid receiving burns from objects you heat.

When solder is heated, fumes are released that can be harmful to your eyes and lungs. Solder in a well-ventilated area or use a fan.

Even though you have turned off and unplugged your soldering iron, it will be hot for some time. Never leave a hot soldering iron unattended. Also, wash your hands when done soldering, especially if you're using lead solder.

Tinning the tip will increase the surface contact area, allowing more heat to be transferred to the metal you're trying to solder. Do this by applying a small amount of solder on the tip of the soldering iron before trying to solder anything. You should tin the tip of your iron before and after each soldering session to extend its life. Eventually, every tip will wear out and will need replacing when it becomes rough or pitted.

Clean the tip frequently to remove oxidation. The most common ways are using a damp sponge or a brass wire ball.

Never scrape your tip with sandpaper, a knife, or other abrasives. This will take the outer layer off the tip, allowing dirt to build up and cause performance issues.

One of the biggest mistakes is choosing an underpowered soldering iron. A thermostatically controlled soldering iron can be set to a temperature suitable for each soldering job. These can be simple 20-60W irons or a full-featured soldering station with temperature control. If you're building antennas, making ground connections or preparing feedlines, a 100W soldering gun is a good choice.

A helping hand is a device that has two or more alligator clips and sometimes a magnifying glass and light attached. These clips will assist you by holding the things you are trying to solder and help prevent burns. Circuit board holders keep your circuit boards in place and allow you to rotate the board for easy access.

Solder is a metal alloy material that's melted to create a solid bond between electrical parts. It comes in both lead and lead-free variations with diameters of .032" and .062" commonly available. Inside the solder core is flux, a material which helps improve electrical contact and mechanical strength.

Thicker diameter solder is good for soldering larger joints more quickly, but it can make soldering smaller joints difficult. For this reason, it's a good idea to have both sizes on hand for your different projects.

Manufacturers are moving toward lead-free rosin core solder for health and environmental reasons. This type of solder is usually made up of a tin/copper alloy and has a higher melting point, making it a bit harder to work with. You can also use a 60/40 tin/lead rosin core solder. If you do use lead solder, make sure you have proper ventilation and that you wash your hands after use.

Whenever possible, make a good mechanical connection before soldering. This will make a stronger contact.

Touch the tip to the metal you're trying to solder, whether it's a terminal or a solder pad. Slowly add some solder until you see the solder run to the metal. Once you see the solder moving onto the metal, you can add the solder a little faster until you have a good amount of solder and the connection is made. Leave the tip on for an additional second.

Once you have made the solder connection, you'll want to remove the soldering iron and not disturb the connection until the solder has hardened. If you move a connection too soon, it will either fall apart or cause a cold solder joint. A proper solder joint is smooth, shiny and looks like a volcano or cone shape. You want just enough solder to cover the entire joint but not too much so it becomes a ball or spills to a nearby lead or joint.

Soldering is forgiving, which makes it relatively easy to fix most any mistakes. If you apply a little too much solder or position a component incorrectly, you can reheat the joint, melt the solder and then reposition it correctly. Solder can be heated and cooled as many times as you need to get your joint properly fixed. If you don't get the outcome you were trying for, don't get discouraged—try again.

Desoldering is the process of removing solder at the joint to disconnect two items that have been soldered, or removing an accidental solder bridge. Desoldering may become necessary if you want to replace a component that is defective, or if you want to change something about your design after it has already been soldered. To desolder wires you can usually just heat them up and pull them apart. To remove excess solder, you can use a desoldering station, desoldering braid, or a desoldering pump.

GEARS Repeaters

GEARS West on St. John
145.410 MHz PL is 123.0 Negative offset.
PL both input and output (CTSS)

GEARS East in Forrest Ranch
146.850 MHz Negative offset. PL 110.9 CTSS
440.650 MHz Plus offset, PL 110.9 Hz

GEARS CENTURY MEMBERS

Michael Ellithorp Kent Hastings
Bennett Laskey Jim Van Sickle
Stephen McDermot

We thank these members for their extra support.

GEARS Officers:

President.....Kent Hastings WA6ZFY
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<https://drive.google.com/GEARS>

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Your dues and contributions support our local repeaters, ARES, and outreach events to keep amateur radio alive in our area. GEARs also makes donations to support other local repeaters and clubs.

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